

General comments

Robust and original research that fits recent and growing interest for the snow cover in the field of hydrology due to variations and change of the climate. Please, see my comments below to improve the quality of your manuscript.

Thank you for your positive feedback on our study. Below, we have provided our responses to your comments and outlined the changes we plan to implement to enhance the paper.

Specific comments

Lines 1-2. "Sub-kilometric" and "large areas". Unclear the observation scale in your abstract. Please, revise it.

We don't think that it's necessary to be much more specific in the abstract, these terms are specific enough in the snow hydrology community.

Line 36. "Snow melt is not equivalent to snowmelt runoff". Please, explain better this concept in hydrology. Indeed, a large amount of snow can melt and recharge the groundwater bodies. Back-up the statement with recent literature from mountainous areas on snow melt aquifer recharge:

- Tracking flowpaths in a complex karst system through tracer test and hydrogeochemical monitoring: Implications for groundwater protection (Gran Sasso, Italy). Heliyon, 10(2), <https://doi.org/10.1016/j.heliyon.2024.e24663>

- Long-term trend of snow water equivalent in the Italian Alps. Journal of Hydrology, 614, 128532, <https://doi.org/10.1016/j.jhydrol.2022.128532>

In the context of snow modelling, snowmelt runoff is usually defined as the water flux that exits the snowpack at its base. So, with this statement we did not address any subsurface processes or catchment-scale considerations.

Line 88. I suggest to use the words "research questions" or "research objectives". Very good to be so clear when you explain the aim/objectives of your research. I see your good point!

The research questions will be removed in the revised manuscript (due to the feedback from our reviewers)

Lines 93-104. Please, provide basic information for your mountainous areas on the (i) climate, (ii) vegetation, and (iii) type of bedrock (fractured igneous-metamorphic rocks). All elements that affect infiltration and run-off of the melted snow.

As stated above, this study is about snowpack modelling, not about hydrological modelling. Therefore, subsurface hydrological processes are not considered. Nevertheless we will added glacier and vegetation outlines to Fig. 3.

Lines 217-218. Low and high elevations. Please, be more specific with regards to the topographic ranges.

The updated manuscript will be more specific about these terms.

Line 335. "This is not very informative". Please, insert the object after the word "this" to make the sentence clear.

"This" refers to the "information" in the previous sentence. We prefer to keep it like that to avoid the repetition of "information"/"informative".

Line 407. "Diversity of topographic conditions". Be more specific and not vague in your conclusions. I am trying to bring the impact out of your good research.

Specific information is available at the end of the conclusions, where the reader has already been familiarized with elevation, aspect, and slope. We don't think that we need to repeat ourselves here.

Lines 419-584. Please, integrate relevant literature on snow melt in hydrology, see above.

We included all the relevant literature from the list of papers provided.

Figures and tables

Figure 2. Provide explanation for the blue areas (0 observations per month) in the caption for the third figure in central-lower position.

In the meantime, we received additional remote sensing data, which is why we now also have data for NE Switzerland. The figure will be edited accordingly.

Figure 3. Dashed lines are better for the horizontal lines for elevations 2010 and 2290 mASL.

Thanks for the suggestion.

Figure 9. Letters and numbers on the axes are too small for all the four graphs.

This figure will be edited and should be more readable.